



# Solar and Wind Energy Resource Assessments for Stimulating Investment

Title: Solar and Wind Energy Resource Assessment for Sri Lanka and the Maldives  
Program Area: Rural Energy  
Implementer: National Renewable Energy Laboratory  
Geographic Focus: Asia & Near East  
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Energy resource assessments present enormous potential for investors interested in developing a wind energy market.

island nations blessed with extensive renewable resources such as hydro, biomass, wind, and solar resources, it made sense to investigate the potential for a more expansive plan to exploit these resources. So, the Sri Lankan and Maldivian Governments approached USAID for assistance in assessing their renewable resources.

## Development Objective


USAID in collaboration with local in-country partners planned new energy projects that would strengthen and reconstruct the national grid (in the case of Sri Lanka), or to provide clean, reliable energy resources to island communities (in the case of the Maldives). Both Governments believe that a shift towards an energy infrastructure optimized for economic development, energy security, environmental benefits and possible export production, will benefit the entire nation.

## Approach

Under the USAID-funded project, the Ceylon Electric Board (CEB) worked with the National Renewable Energy

## Project Background

Sri Lanka and the Maldives are working to improve their energy infrastructure in a way that will reduce their dependence on imported fuel, compliment their economic growth objectives, and maintain the quality of their environment. Traditional energy sources such as coal, natural gas, and oil are largely imported resources that are expensive and create few in-country jobs during their extraction and refinement. And since Sri Lanka and the Maldives are



Laboratory (NREL) and other partners to conduct a wind and solar energy resource assessment for Sri Lanka. Data on wind resources (wind speed and direction, frequency, wind shear, wind density, etc.) was collected for the entire country, and NREL characterized and mapped the data using both new and existing instrumentation, sophisticated modeling techniques, and geographic information systems (GIS). The GIS allowed them to combine the resource data with locally provided information on terrain, population, roads, and transmission infrastructure.

The project was interactive, with CEB guiding the analysis as it evolved. For example, as wind resource potential was measured and candidate sites were identified, CEB could evaluate grid interconnection potential, transmission loads, population loads, site accessibility, political factors and community acceptance as key issues in the potential success of a project.

The objectives were developed through the following activities:

- 1) Wind resource mapping for Sri Lanka and the Maldives
- 2) Solar resource assessment for Sri Lanka and the Maldives
- 3) Integration of resource and related data into Geographic Information Systems
- 4) Investigation of grid-connected wind energy opportunities in Sri Lanka

## Project Partners

USAID and NREL have coordinated their work closely with the Ceylon Electricity Board in Sri Lanka, the Ministry of Science, Technology, and Communication in the Maldives, and other government planning and electrification agencies in the two countries.

## Project Activities

Wind and solar resource assessments were conducted for Sri Lanka and the Maldives, and incorporated into GIS software. A report assessing wind farm installation opportunities in Sri Lanka was also prepared. Preliminary results were presented at the SARI-Energy semiannual review in Bangkok in December 2002, and at a major renewable energy workshop hosted by the U.S. Chamber of Commerce in Colombo in June 2003. NREL also hosted a study tour from Sri Lanka and the Maldives in November 2002.

## Project Results

In June 2003, the results were rolled out at a regional conference in the Sri Lankan capital city of Colombo. The wind and solar maps showed the quantity, distribution and availability of the resources, and confirmed that Sri Lanka and the Maldives have ample resources to provide a significant portion of their electrical needs from renewable energy sources.

For example, the wind resource map shows multiple locations where multi-megawatt wind farms might be practical additions to Sri Lanka's energy infrastructure. This is the first time that



energy planners have been able to view the quantity and extent of wind resources in Sri Lanka in such detail. The maps show that over 24GW of wind electric production is possible in Sri Lanka – far above current energy use patterns.

### **Lessons Learned**

Making critical information on renewable energy resources available in a format that can be easily accessed and interpreted by government planners and investors at an early stage of renewable energy development will greatly enhance and accelerate investments in these technologies.

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